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MICROSCOPY.[1]

The Solution of the Dust Problem in Microscopy.—The statement of the dust problem is this: Given a stock of cleaned micro-slips and cover-glasses, to keep them clean and ready for use at any moment, without the necessity of brushing or wiping them. The following solution is the result of a laboratory study of the problem, and is now announced after having received the approval of leading microscopists.

The objects to be accomplished are:—

1st, To secure a dust-proof magazine for storing the cleaned micro-slips and cover-glasses in separate compartments for the different sizes of squares, circles, and oblongs.

2d, To provide simple mechanical appliances for removing a single slip or cover without exposing those remaining in the case.

3d, To provide an automatic device for warning the operator of the approaching exhaustion of his stock of any of the shapes of covers and of slips, thus avoiding the necessity of opening the case except to replenish stock.

4th, To provide against the breaking or disarrangement of the covers in case of the accidental overturning of the case.

5th, Incidentally to provide a mounting table with guides for centering the objects and cover-glasses, the whole apparatus being so constructed that the glasses are not touched by the fingers, and only once by the forceps until the slide is completed and labeled.

The Dust-proof Slip and Cover-glass Case[2] fully meets these requirements.

Plate VI is a front view of the case which is 4½ inches square on the base and 6 inches high. The slips and mounting table are contained in the lower half and the cover-glasses in the upper portion. The mounting table is shown in position for work, and the concentric lines for guidance in properly centering the objects and covers are seen on the celluloid slip. Four dust-excluders are hinged to the front of the grooved table, and two of them are shown opened so as to expose the slots through which the cover-glasses pass out upon the grooved table. The milled head of the roller which pushes the cover-glasses out of the slots is shown at the side of the case. A screw stop is inserted in the front of the case above each slot.

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[1] Ed. by C. O. Whitman, University of Chicago.

[2] Patent applied for.

The case is fitted for 3 inch by 1 inch glass slips of any thickness, and has a capacity of six to twelve dozen. It has four compartments for the cover-glasses of the sizes ½ inch, ⅝ inch, ¾ inch, ⅞ inch, or 12mm, to 24mm., either circles or squares or oblongs of the above widths, and any lengths up to 2¾ inches. The screw stops regulate the depth of the slots for either No. 1, 2 or 3 thickness of cover-glasses.

Plate VII is a vertical section from front to back, showing the plan of the case. The section of the lower half is made in the median plane, that of the upper half in the plane of a screw stop. Through the base (b) projects the stop (s) into a narrow groove in the mounting table (mt) which slides in and out between the base and the floor (f) of the stock compartments (sc′). The service compartment (sc) is deepened by a shallow cavity cut into the upper surface of the mounting table, and in the bottom of this cavity is fitted a sheet of celluloid bearing a series of concentric lines. The slips (ss) are stacked in the service compartment, the lowest slip filling the shallow cavity in the mounting table as shown at (ss′). A warning slip of paper (ws) is folded around the front edge of the top slip. The loose partitions (p) running in grooves in the sides of the case can be removed after sliding back the cover (c). In the base (f′) of the cover-glass case is the groove (r′) for the roller (r) which is made of brass and covered with chamois. To the front of the base is hinged the brass dust-excluder (de) whose lining of silk plush protects the grooved table (t) and the slot (sl) from dust. The dust-excluder also prevents the delivery of a cover glass by the roller except when the slot is opened. Into the slot projects the point of the screw-stop (st) which is so adjusted as to permit the passage into the slot and out upon the grooved table of only one cover-glass at a time. Above the roller are stacked the cover-glasses (cg). Near the top of the stack is placed the warning disk (w) and upon the top cover-glass rests the loosely-fitting follower (cf) which prevents displacement and breaking of the covers, if the case is accidentally overturned. The adjustable partition (ap) may be moved backward or forward to fit any length of cover-glass from ½ inch to 2¾ inches. The cover (c′) is so constructed as to exclude dust.

Plate VIII is a front view of a form of the case as made for one size cover-glass, either circles or squares, and of either ⅝in., ¾in., or ⅞in. diameter. The open dust excluder is hinged above the slot at the sides of the case. The engraving does not show the groove in the table in front of the slot. A slip is shown in position in the mounting table. One of the lateral grooves in the mounting table is not represented.

The plan in general, is the same as in the complete form illustrated in Plates VI and VII.

Method of operation.

Thoroughly dust the inside of the case and partly, or completely, fill the compartments with clean slips and cover-glasses of the proper sizes and place the warnings in position. The apparatus is then ready for immediate use, or at any time during successive weeks or months until the stock of slips and covers is exhausted.

The slips are withdrawn from the case singly by pulling forward the mounting table, and from this they are removed, either before or after an object is mounted, by inserting a finger into the notches cut into the sides of the table. The mounting table is automatically reloaded on being pushed back into the case. The warning slip having been withdrawn, the service compartment is again filled by removing the sliding cover which carries with it the cover-glass case, withdrawing a loose partition and sliding the cleaned slips from a stock compartment into the service compartment.

Whenever a cover-glass is needed, the dust-excluder in front of the proper slot is opened by a touch of the finger, the milled wheel is rotated and the chamois covered roller pushes the bottom cover-glass through the slot and out upon the grooved table, where it is readily grasped by the forceps. This action is positive because the friction between chamois and glass is greater than between two clean glass surfaces. The table being grooved, only the extreme margins of the cover-glass touch it. A touch of the finger closes the dust-excluder.

It will be noted (a) that the slips and covers are doubly protected from atmospheric impurities by the dust-proof case and the constant contact of clean glass surfaces with each other; and (b) that in the process of removal for use they do not come in contact with any surface from which they receive dust. They come out as clean as when, weeks or months before, they were put into the case. Thus the dust problem is solved.—A. H. Cole, A. M., University of Chicago.

Cooling Paraffine.—To those who have experienced the inconvenience and difficulty connected with the preparation of good paraffine sections in the Tropics or even in the Tropical Summers of other climates, the following simple device of Professor C. Gracomini[1] may be a welcome suggestion.

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[1] Arch. Ital. de Biolegie, IX, 1888, p. 380.

A small rubber tube, a meter or so long is connected with a vessel of ice-water partly stopped at the other end so that a slow stream passes through it. This tube is wrapped around the paraffine block upon the microtome and cools it off so that thin sections can be cut.

If in winter the paraffine is too hard, the same device with warm water may be resorted to.

PLATE VI.

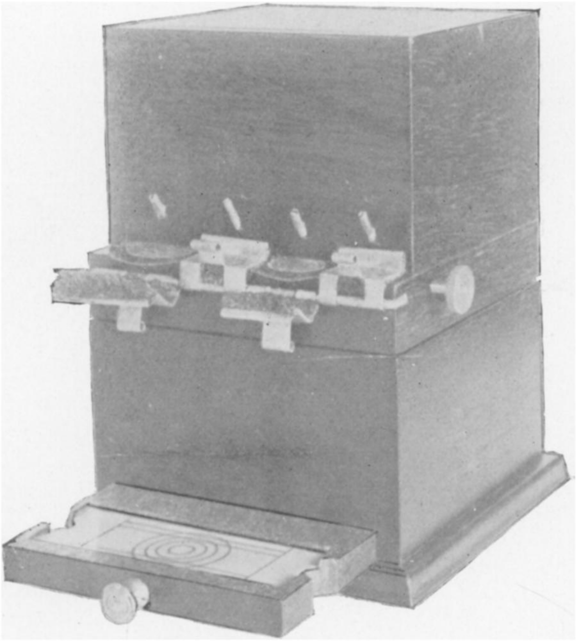

PLATE VII.

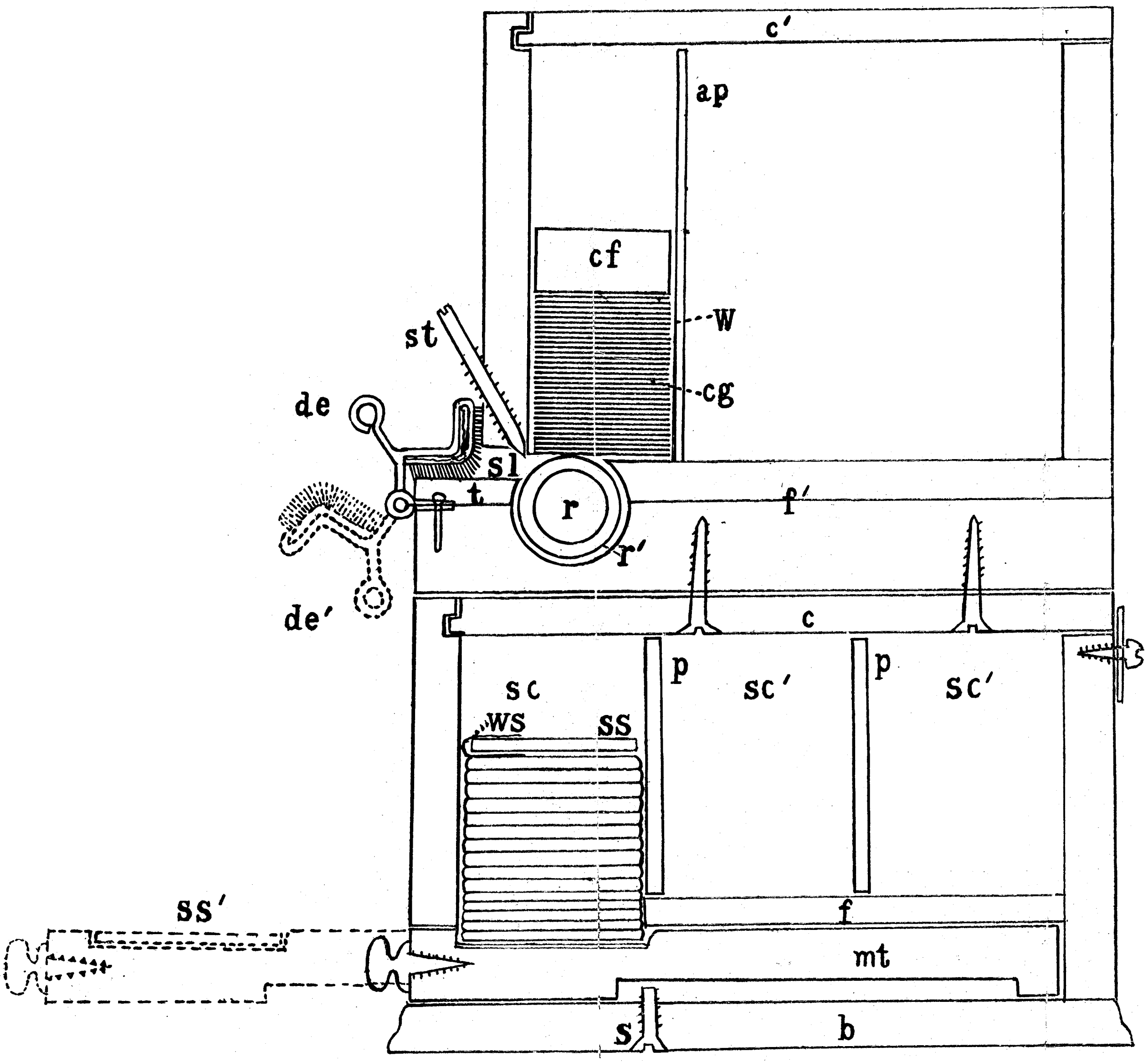

PLATE VIII.